

FIELD
RECORDS

TE VEGA - C. A.

J. ROSEWATER

SYMBOL - MO.

(MOLLUSCA)

7530-222-3521
FEDERAL SUPPLY SERVICE
(GPO)

write section for I PM - describing
radiation in Tridacnidae - il: form
& function vs. evolution and ecology -
reduction in ^{byssal} adductor of crocea correlate with
life in coral pocket - etc.

Joseph Rosewater
U.S. National Museum
Washington, D.C.
Division of Mollusks

Ken:

8/5/64

Have you seen Charles Hedley's
drawing of living Solecardia
cryptozorca Hed - ?

1917 Proc. Linn Soc N.S.W. for
1916 vol 41, pt 4, pl. 46 fig 1.
[looks like "rug" Argentinid from
IIDE]

see MO-15 for Tridacna & other
bivalve for testing.

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see MO-15 for Tridacna + other
bivalve for testing.

see MO-15 for "Tridacna" bivalve
see list of bivalve for details
of common groups

liona l

Dec, 1963

Field Records

Te Vega Cruise "A" - International
Indian Ocean Expedition

Singapore - Colombo, Ceylon - Oct - Dec, 1963

Symbol "MO"

MO-1 October 12, 1963 - Kampong Hoyang,
Northeast Singapore - Littorina and Nerita
from sea wall at home of David Everett.
Achatina fulica and other land snail from
ground along garden path. Rutzler, D. + B.
Everett, J. Rosewater! [Te Vega Sta. No. 62]
Lat $1^{\circ}22'N$ Long $103^{\circ}57'E$ HD 3750

MO-2 October 15, 1963 - Sekudu Island,
Strait of Johore, Malaysia - northeast, across
strait from Kampong Hoyang^(=Molegan village) (near Changi) -
0-3 ft., sand silt, soft coral, sponge, Haliweda,
Pinna, Voluta nobilis (not taken - found by native boys +
given to Mrs. Everett - young - taken with sticks in
shallow water), Murex, Turbo, Littorina^{+Nerita} from
rocks on Island out of water; Littorina "carinitera"
from mangrove trees. [Te Vega Sta. No. 63]
Lat ~~$103^{\circ}58'$~~ $103^{\circ}59'E$ Long $103^{\circ}59'E$ HD 3750

MO-3 October 16, 1963 - Northeast coast - East
St. John's Id. - south coast of Singapore, rising
tide - 0-6', sand, some silt, rock, dead
coral, dead conus, Lyrene, oysters, Mitra..
[Te Vega station No. 64]
Lat $1^{\circ}13'N$, $103^{\circ}51'E$ ~~HD 3750~~
HD 2670

Lat. $10^{\circ} 10' N$ - Long $103^{\circ} 45' E$ H01205

MO-4 - Pulau Hantu ^{southwest} - Singapore - southwest
of Keppel Harbor, near P. Bukum ("shell
oil Id.") October 18, 1963. Low tide 5:20 P.M.
1.6' - sand soft and hard coral, sponges, Sargassum;
large "reef" uncovered or shallow water at low tide, ^{boat grounded.}
Pinna, Atrina, Lambis, Cypraea, Angaria, Lima;
Mangrove swamp with Terebralia; Littorina undulata
+ L. scabra on mangrove branches; Planaxis on
roots; also Rhinoclausis in sand. Collectors:
Rosewater, Kohn, Rutzler, Colinvaux, Mrs. Everett, Bud
Barrett and students! Boat freed from reef by
incoming tide - return begun at about 8:30 -
arrived Te Vega about 10:00 P.M.!! Good spot -
Conus consors coming out of sand at twilight -
seven specimens collected by and for A.T. Kohn,
[Te Vega Sta. 65]

N.W. St. John's Id.
MO-5 P. Tekukor - Singapore - Oct 20, 1963
Tridacna squamosa ^{Tan striped mantle} - and general
collection - Rosewater, Rutzler, Kohn,
Johnson ^{shore} - Coral reef flat, nearly
low tide - flourishing coral heads
and abundant rubble, Diadema -
^{Crinoids} 3-6' - sharp drop off at edge
of reef. (Hired boat \$25.00) ^{making}
[Te Vega Sta 66]

MO5 - Coord. Lat $10^{\circ} 13' 50'' N$

Long $103^{\circ} 50' E$

H02670

MO-6 Pulau Anyut, Malacca Strait,
just southeast of town of Malacca.
Lat $2^{\circ} 4' 46''$ North, Long. $102^{\circ} 18' 15''$ E., Oct. 26, 1963
Shore and reef, water turbulent, silty;
rocky shore, huge boulders; very poor visibility;
a few rocky shore gastropods - *Thaids*, *Littorina*,
Trochus, *Turbo*, oysters; leeward corner of
Id. very clear. Reef narrow, dropping rapidly
off to deeper water. Kohn, Rat Zler, Rosewater,
Barrett, Bronson, DeSalvo. [Te Vega Sta. 67]

HO 3745

MO-7 Pulau Besar, Malacca Strait, just
southeast of town of Malacca, Lat 2°
 $6' 45''$ N, Long. $102^{\circ} 19' 45''$ E., Oct. 26, 1963
Beach on west side of Island - water very turbid -
moderate wave action, sand inshore -
turning to grey silty mud at about 6-10'.
"Astraea", *Littorina*, *Amphidesma*, hermit crab
shells. Rolf Boling, Senior Scientist & students!

[Te Vega Sta. 68]

HO 3745

Malaysia
 MO-8 Cape Rachando - Straits
 of Malacca lat $2^{\circ} 24' N$.
 long $101^{\circ} 51' E$ October 27, 1963.
 Beach Reef and adjacent mangrove
 area. Note "spiny oysters" and (*Pembicium*)
 or *Peasiella* in jar vial, *Littorina* and
Planaxis from mangrove trunks and leaves
 also mangrove oysters. *Murex* from reef
 water again turbulent, silty - only partially
 clear in areas. Kohn, Rosewater!
HO 3745 [Te Vega Sta. 69]

Lat $2^{\circ} 59' N$. Long $101^{\circ} 23' E$
 Malaysia
 MO-9 Port Swettenham - Northeast corner
 Pulau Lumut - mangrove swamp. October 29,
 1963. *Littorina melanostoma* on mangrove
 trunks; *L. carinifera* on leaves; *L. scabra*
 (young?) on trunks; *Terebralia*; *Paludina* (?)
Pithia? small (very) Ellipsoid + *Pithia*? *Nerita*,
Telescopium. [Te Vega Sta. 70]
HO 3742 [3743?]

MO-10 Pulau Jarak, [Malaysia]
Lat. $3^{\circ}59'N$, Long. $100^{\circ}6'E$ - due west
of Simbilan Ids. and mouth of Perak
River. Highest elevation 508', granitic
boulder shore - Mollusk collection at
eastern end of Id. - coral, boulders, some
sand - moderate wave action. *Vasum*, *Thaids*,
Barbatia in pockets in coral heads, *Cypraea*,
Littorinids on boulders above water, also
Chiton - 3 *Cones* - taken for A.J. Kohn

October 30, 1963 - HO 3120 - (Tevega Sta 71)

[*Lambis* ——— and *Turbo marmorata*
taken by R. Bolin and assistants at fish station
contiguous but east of MO-10]

Collectors: A.J. Kohn, K. Ratzler, L. Colinvaux, J. Rosewater
and students.

MO-11 Lat $4^{\circ}07'N$ Long $100^{\circ}00'E$ - 1400 -
1430 hrs. (Tevega Sta 73) Dredge Haul
in 37-37 fms. 6 ft Beam Trawl - HO 3120
Haul consisted mainly of sponges and varied
alcyonarians. One *Turris*, *Chama*, *area*,

MO-12 Pulau Perak - ^{lat} $5^{\circ}41'N$ ^{long} $98^{\circ}56'E$
October 31, 1963 - 0830 - 1030 hrs. HO-3120

Rocky Mound - 308' high. narrow shelf -
then dropping rapidly off. Bird sanctuary -
no vegetation - predominantly Brown Booby -
few Thais - rock oysters taken
snorkling - [Te Vega Sta No. 74]
Fish Poison station - some swell, but
mainly calm.

MO-13 ^{lat} $5^{\circ}48'N$ ^{long} $99^{\circ}50'E$ - 31 Oct, 1963
^{HO 3120?}

Dredged Haul in 53-55 fathom -
Green Clay - 6 ft Beam trawl - Sandy
mud with many pteropod shells.

Turris, Nassarius, Biplex, scaphopods.
Many empty mollusc shells - Conus -
praececellens alive taken by Alan Kohn;
also C. sulcatus + C. vimineus Rue.
[Te Vega Sta. No. 75]

MO-14 Laem Phan-Pha, near Phuket
Thailand - November 2, 1963 - 0630 -
0830 [Te Vega Sta. 76] Lat $7^{\circ}52'N$.
Long. $98^{\circ}26'E$ - HO 3726.
Molluscs collected around Phan
Pha "Point." Thais, *Siphonaria littorina*
spp. *Cypraea*, *Cymatium*, *Melampus*.
Kohn + Rosewater. (+ *Umbonium*
in mud-sand.
by DiSalvo + Bronson,
Gislén

Nov. 3, 1963

MO-15, Goh-Huyong, Similan Islands,
Thailand Lat $8^{\circ}28'50"N$, —
Long. $97^{\circ}39'00"E$ - Admiralty 3052.
Reef area NE side of Goh Huyong.
Steep Beach of poorly sorted calcareous
sand. Considerable surf - coral reef
just off Beach - coral heads and fragments
Lambis, *Tridacna maxima*, *Trochus*, *Nerita* -
hand shells taken on Island vegetation.
Collection made in morning and late
afternoon - coinciding nearly with -
day's low tides [Te Vega Sta No. 77]

* *Tridacna* + other bivalve - for testing
shells.

MO-16 6' Beam trawl - 70 f m -
start 1815 end 1840 67 f m.
Lat $8^{\circ}46'N$. Long $97^{\circ}46'E$. Nov. 4, 1963.
Misc. Dead shells, few living - 2 species
of Conus [Te Vega Sta No. 80]

MO-17- November 5, 1963
Goh Sindarav Nua (Chance Id.)
Thailand. Lat $9^{\circ}25'30"N$. Long $97^{\circ}54'00"E$
Admiralty 3052 Tide low, ca. +2.5' at ca. 1700
Reef area fringing northeast side of
large bay on Goh Sindarav Nua, near its
mouth. Much living and dead coral;
Tridacna maxima, *crocea*, common, some
T. squamosa. Inshore portion with much
medium fine (?) sand, some flat reef
limestone covered with thin layer of sand.
Offshore portion (to ca. -2.5' level)
mainly hard substrate - coral heads, and
(dead coral) limestone with some sections
paved with Acropora rubble in large
pieces. At greater depths increasing
proportion of sand with scattered coral
heads. [Te Vega Sta No. 82]

Thailand.

MO-17a Goh Sindaran Nua - ^{west} Southeast side of deep bay - south side of island - beach and coral heads.
November 6, 1963 7:00 - 9:00 A.M.
Rising tide. Terebra, "Acanthochiton" (narrow plates). + land shells from hill above beach.

MO-17b. Reef at ~~Southeast~~ west point of island - lush coral reef - dropping suddenly into channel between islands. Many large Tridacna maxima - 12-13" in length - with variably colored mantle but lacking the brilliance of Marshall Island specimens. Fasciolaria taken by Jim Nybakken. Nov. 6, 1963 9:30 - 10:30 AM

MO-17c Small dredge - short haul taken in 3 fathoms N. east side Goh Sindaran Nua. Few brachio (moll) and one Nassoid.

MO-17d - Mangrove swamps - at ^{head} deepest part of bay, ^{south side} Goh Sindaran Nua. Littorina and Nuxodonta on mangrove roots; also rocks adjacent to mangrove. Thais, Merita, Nuxodonta, Turbo.
Nov. 6, 1963.


Lat 9°25'N Long 97°52'E

MO-17 e Nov. 7, 1963 ~~South East~~
side Goh Sindarar Tai (Bay),
10-15' - sand coral heads and
Rubble - large *Tridacna squamosa*
ca. 16" length - Kodachromes taken.

MO-18 Nov. 8, 1963 - Goh Similan,
Similan Ids, Thailand. Admiralty 3052
Lat. 8°38'45" N. Long. 97°39'10" E.
Beach and coral heads east side of Id.
Considerable sandy areas, negligible wave
action. 4-15' depth. *Terebra* and *Mitra*,
from sand tracks; *Cypraea tigris* from
bases of coral heads; anomalous or
barely immature *Lambis chryagra* from
beneath coral Rubble. [Te Vega sta No. 85]
few Conus collected by and for A.J. Kohn.

MO-19 Nov. 9, 1963 Goh Phi Phi
(Pipidon), Thailand ~~Lat.~~ ^{Long.} $98^{\circ}48' E$
~~Long.~~ $7^{\circ}40' N$. Cove on Northwest
side of Id. - Extensive calcareous
sand beach - with coral rubble +
evidence of dying reef - also fresh
water emptying. Mid tide - water 0 -
5' - rocks and mangrove swamp at
edge. 1700 - 1800 hrs. [Te Vega Sta No
- MO-19a + Rocks at ^{mouth} head of Bay Nov 1963

MO-20 Nov. 10, 1963 Pulau Tonga
(or Ta Ngah), Butang Group,
S. Thailand. Lat. $6^{\circ}34'24'' N$,
Long. $99^{\circ}27'36'' E$ Admiralty chart 3942.
Rather steep sandy beach. Inshore area of
reef flat with sand substratum,
isolated outcrops of reef limestone,
few to many dead coral heads +
boulders with some terrigenous boulders
on sand and limestone. A rich area for
mollusks. (see Vanikoro sp., "winjel" bivalve
+ many other mollusks. 0845-1130; 1500-1700
[Te Vega Sta No. 88])

MO 21 - Pulau Ular, Langkawi Islands,
Malaysia lat $6^{\circ}15'45.4''$ N.
Long. $99^{\circ}44'$ E. Nov. 14, 1963 - Small Island,
"Humpbacked" (double hump)  - Sedimentary
rock - medium coarse shell sand beach - 0830-0930
hrs. Water turbid - raining - snails &
bivalves from mangroves, rocks and water
near beach - bag of shell sand taken
for sorting later. [Te Vega Sta No. 89]

Nov. 17, 1963
MO-22₁ - Airport Beach, Koh Phuket,
Thailand - fringing reef off
beach - rising tide, 0700 - 0930 A.M.
water 4-6' - Conus, Turbo, Lambis
Cypraea. Lat. $8^{\circ}5'N$. Long. $98^{\circ}17.9'E$.
[Te Vega Sta. 90]

MO-23 - Nov. 17, 1963 S. side of Ao Pa
Tong, Koh Phuket, Thailand H03760
 $7^{\circ}53'15''N$ $98^{\circ}17'00''E$. Fringing reef
along S. shore of Ao Pa Tong, and
adjacent sand beach. Narrow reef.
Olivella from beach at low tide (trails) -
Tridacna crocea, Fasciolaria, Turbo, etc
from reef, Nerita from rocks on shore;
fresh water stream entering. 2 large Sepia seen
stationary. [Te Vega Sta. No. 91]

7°45'N 95°12'E

MO-24 Nov. 18, 1963 Ao Ra Wai,
Goh Phuket, Thailand.

Fringing reef in bay. Porites lutea,
Acropora sp. common. Proportion of
sand substrate increases in offshore
portion. Cypraea spp. common.

Kohn + Colinvaux! [Te Vega Sta 92]

MO-25 Nov. 20, 1963 [Te Vega Sta 93]

Pulo Boenta, off Aceh Head,
North west-Sumatra, Indonesia

Lat. 5°36'N. Long. 95°9'E. HO 3101

Fringing reef, low tide - off sandy
beach - High island - coconut

plantation 1530 - 1730 hrs. Turbo, Conus,

Mitra, Magilus (from coral), Fasciolaria,

Cymatium, Cypraea, etc. Collections

made from reefs and rocks on
south and northeast side of island.

MO-26 Nov. 19, 1963 Olehleh, west
of Kota Raja, Northwest Sumatra.

Squid taken at night light at
anchorage, surface. Bud Bartlett!

5°34'N 95°17'E. HO 1595 [Te Vega
Sta. 96]

MO-27 - [Te Vega Sta No. 96]

Nov. 21, 1963 Time 1400-1800

Lat. $03^{\circ}25'N$ Long $95^{\circ}40'W$. U.S.H.O. 1595

↓

Off southwest coast of Sumatra,
about 50 miles from shore, depth
1150 Meters. 6' Beam Trawl.

Amusium, Trochid, Cuvulata,
Polynices.

MO-28 [Te Vega Sta No. 97.

Nov. 22, 1963 0830-1030 hrs.

Pulo Penju, NE of Pulau Simalur,
Sumatra, Indonesia Lat. $2^{\circ}51'N$,
Long $95^{\circ}56'E$. Fringing reef at
north end of island - coral heads
and rubble, gently sloping shore,
water calm - 0-6'. Rich gastropod
area (+ shells bought from natives
Charonia, Ovula, Terebralia, Lambis)

BA 6152

MO-29 Pulau Melila. south of
Udjung Batu, Banyak³ Ids.
off Sumatra, Indonesia

Lat. $2^{\circ} 15' N.$, Long ~~25°~~ $97^{\circ} 25' E$

Wide reef extending N + S between
(P.) Udjung Batu and Rangit Br.

Melila is not shown as Id., but present.
Sandy with coral rubble and living coral.
depth 0 - 6'; 1st appearance of Hippopus
living; dead valves of Tridacna gigas;
also living T. maxima + crocea. Rich

molluscan fauna - many cypraea, fasciolaria
Terebra; immature marginellid + spotted
cypraea with spotted shell and red
mantle - 0830 - 1130 hrs Nov. 23, 1963

[Te Vega Sta 98] [1st news of Pres.
Kennedy's death].

At this locality we were shot at
(the ship) by Indonesian Police;
said to be target practice!

MO-30 Nov. 24, 1963 [Tevesa Sta. 99]
Palo Nias, southwest of Sumatra,
Indonesia., southeast coast of Island.
Lat $00^{\circ} 42' 51''$ N. Long. $97^{\circ} 53'$ E
mouth of ^{2.9} fresh-brackish tidal
stream - Neritina, and on rocks
along surf swept shore - beach
of smooth, washed cobble - village
at mouth of stream - natives
most friendly and cooperative;
head man and others visited ship.

MO-31 [Tevesa Sta. 100] Nov. 24, 1963
Time: 1550 - 1920 Lat. $00^{\circ} 33'$ N
Long. $98^{\circ} 05'$ E 1403122
SE of Pulau Nias, south of Sumatra
Indonesia, Depth 600 M. Bottom
Green Mud. 6 Foot Beam trawl
1 spec. Giant Lima, Fissurellid,
"Crepidula", Amusium, several dead
gastropods, Bachiopods on Alcyonarian.

see Lima (Acosta)
mussel shells 1964
Cyd. Conch. Lib. (NF)
7 (2a) Faint lines
m 23, pl 3, fig 3,
pl 4, fig 12

MO-32 [Tc Vega Sta 101] Nov. 25, 1963

1030-1215 Lat $00^{\circ}01'45''$ S,
 $98^{\circ}31'15''$ E. H03122

Pulo Bai, Batu Group, off
Sumatra, Indonesia. Extensive
shallow coral reef off ~~South~~^{North} end
of island - much coral rubble +
living coral. 1st living *T. gigas*
collected in shallow water $1\frac{1}{2}'$ -
overall depth varying from 0-6' -
sandy patches in reef yielded
Distorsio * *Terebra* + *Mitra*.
also collected Nov. 26, 1963

Lat $00^{\circ}02'S$, Long $98^{\circ}30'E$

MO-32a Nov. 26, 1963, 4:00 - 6:30 P.M.

E. side P. Masa west of P. Bai,
Batu Group. Barrier Reef and
sandy patches water 2-6'.

MO-33 Nov. 30, 1963 0830 - 1230
Lat $01^{\circ}59'5''$, Long $99^{\circ}35'E$ HO 3123
[Te Vega Sta 103]

Pulau Siburn, N. of Sipora,
southwest of Sumatra.

sandy shore, reef and mangrove
fringe + freshwater stream on Island.

Thyca on starfish, $29\frac{1}{4}$ (740 mm)
Tridacna gigas (living in 12-15') Crystalline
style preserved.

Repeats on Night of Nov. 30 + dredging
in shallow water Dec 1, in A.M.

MO-34 Small Island on west shore
of Veeckens Bay, south Pagi
Island, sw of Sumatra. Dec 2, 1963
0830 - 1230 AM. Lat $30^{\circ}14'20''S$
Long. $100^{\circ}25'50''E$. sand + coral rubble
shore of small island Acropora,
+ Porites living with sandy bottom
considerable surge. 0-8' HO 323
[Te Vega 105]

Dec. 2, 1963 - sandy bottom
MO-34A - Veeck Ken's Bay, east of South
Pagi Id. - 15 minute dredge haul
in 15 fathoms, 2' box dredge.

[Te Vega Sta 107] Many fine
species. $03^{\circ}14'S$, $100^{\circ}26'E$ HO 3123
2315 - 2330

Vannosira?

was abundance of
dredged species due partly
to fact that haul taken at night.

MO-35 Dec. 3, 1963 0930-1200 HO-3123
Lat $04^{\circ}01'S$ Long. $101^{\circ}01'30"E$ [Te Vega Sta 106]

Mega, Mentawai Islands, Sumatra
Reef on ^{south} west end of island -
arched (concave) sandy beach - expansive
reef which appears to have been
raised (see also this at S. Pagi) + dries
at low tide - has caused extensive
death of coral reef - a few typical
dead coral crevice species were
present and although the site
looks excellent it appears to be
depauperate. 0 - 4'

MO-36 Dec. 4, 1963 Lat $3^{\circ}27'S$
Long $100^{\circ}41'E$. HO 3123 [Te Vega Sta 108]
Reef fringing N. + N.W. side of
Pulau Stupai, on northern edge
of Sanding Island reef, Mentawai
Islands. Wave swept reef pavement
with frequent movable coral slabs.
weak to moderate surge - abundant
Conus, Cypraea, Vasum - Mitra in
coral.

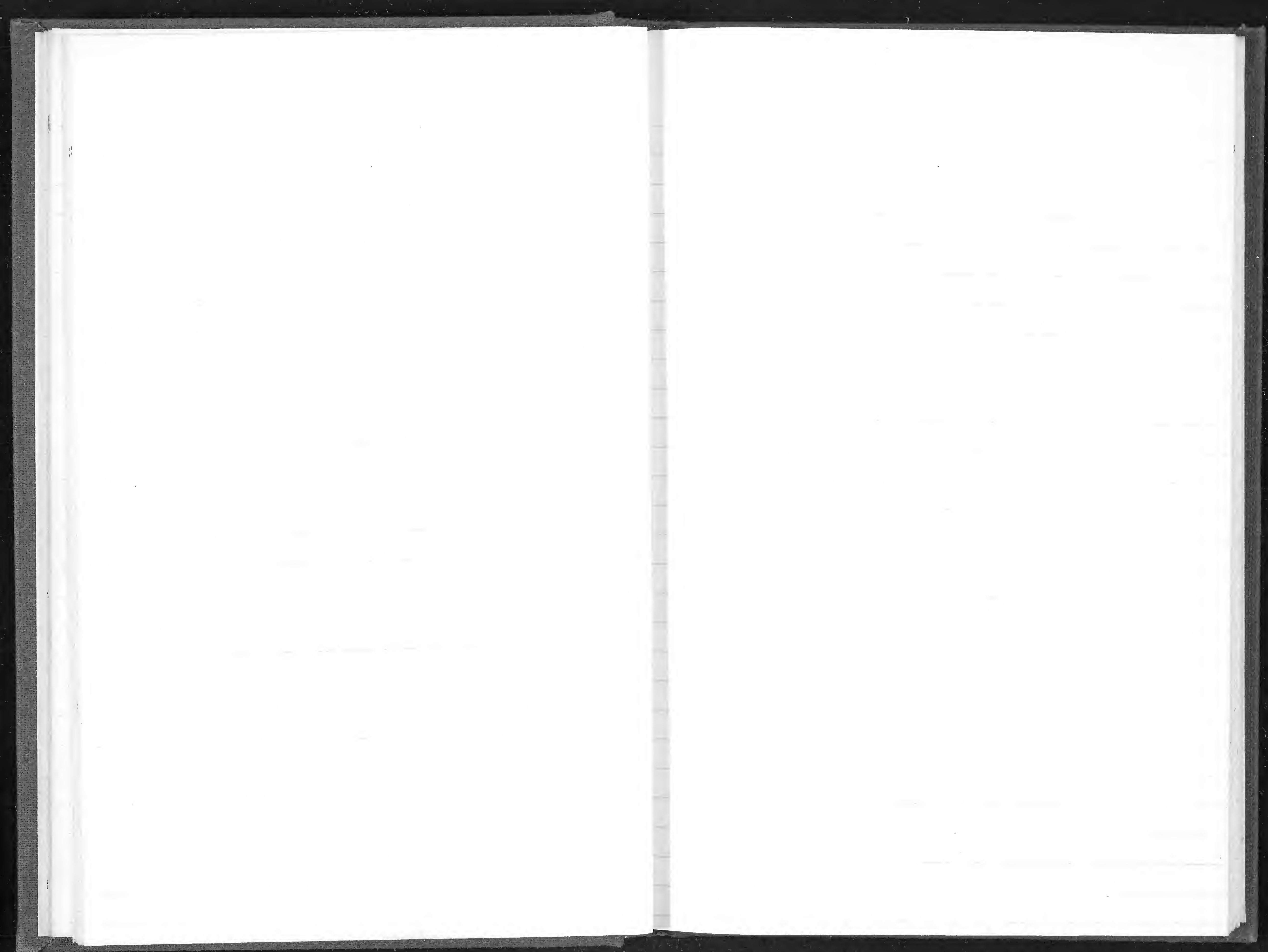
MO-37 Dec. 5, 1963 [Te Vega Sta. 111]
South ~~west~~ east tip Sanding Island,
Mentawai Ids, Indonesia
Lat $3^{\circ} 29' S$, Long. $100^{\circ} 41' E$.
Pavement of fringing reef between
shore (sand beach) and surf -
large quiet area - Mollusks - from
beneath coral slabs and minutes
from breaking coral

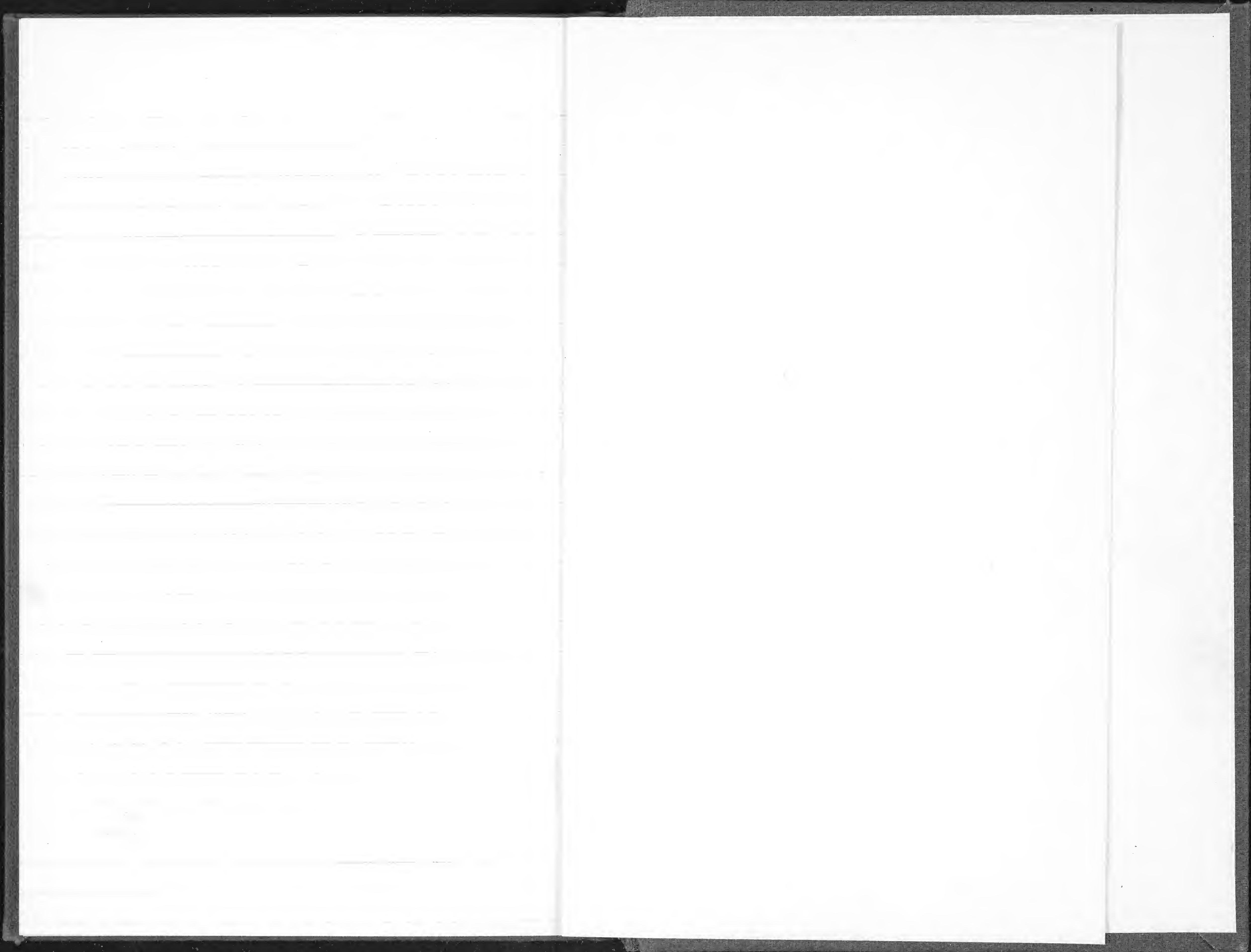
MO-37 A Dec. 7, 1963

South east side Sanding Id. -
sandy beach and offshore sand flat.
with c. 3' - Oliva, Nassarius, etc.

MO-38 Dec. 15, 1963 (Te Vega Sta 113)
Island at mouth of Padang
Harbour, South Sumatra, Indonesia
A.J. Kohn!

= Pasir Gedang (Id.), mouth of Koninginne
Baai, near Padang, Sumatra, Indonesia
Lat $01^{\circ} 01' 15'' S$, Long $100^{\circ} 21' 30'' E$





H.O.

1142

(Shank's Head & Sperm whales - 1176500)

1205

Approximate to long circle

1428

1594

1595

2670

2803

3101

3107

2112

(S.E. direction & ...)

Then back to Phuket - Butang by

→ 10 + 11 Nov Penang - "Kail of Orient" - Supplies - back bus to Phuket via P. Sawhney for

demer to Indonesia -

→ station in deep water

Kotakadja -

Simoloe

↓ Nias

↓ Mentawi → Patu Id →

Padang - supplies - 2 days →

Sijunjung - South Pagi, Raja -

Gado

↓ then north - Sandaway N. M.

Silaut → Padang = 8/8 Dec. -

↓ North - clearing Kotakadja Dec 24

22 - arriving Colombo Dec 28

1963
1927

Then back to Phuket - Butang

→ 10 + 11 Nov Penang - Karl
of Orient" - Supper - last bus
to Phuket via P. Fankowice for
dinner to Indonesia -

→ station in deep water

Kotakadja -

Simoloe

Nias

+ Mentawi → Patu Dr →

Padang - supper - 2 days →

Suggero - South Pagi, Raja -

Gado - then north - Sandang N. M.

silent → Padang = 8/8 Dec. -

+ North - leaving Kotakadja Dec 4.

22 - arriving Colombo Dec 28

1963

1927

Box
Oct 26 -

P. Bozar

P. ~~Hyse~~ Upch

Oct 27

↓ Cape Perbadan

tel 11

3.30 - 4.00 P.M. - mouth of Klang str

→ Pat Swettenham

✓ Mon & Tues at ↗ → K.L.

✓ Tues - weather by K.L. people

✓ Tues night → Ids

✓ P. Jarok = way out - jungle
✓ Pulau Perak - Perak 400' - 1000' offshore
= Bird Booby -

✓ + Plumbat - Thailand - 7 hrs. Searched
in Thai water

↓ North - Samilong Ids - Koh Sing Sa Kua
northmost Thai Id → Southwest of
Mergui Bay

L

- H.O.
- 1142 (Sunda Strait & Approaches - Korbakoa)
- 1205 Approaches to Singapore
- 1428 Keyul Harbour (Singapore)
- 1594 Melaka Harbour - by boat
- 1595 Straits of Malacca (old - small side)
- 2670 Singapore Road
- 2803 Approaches to Penang Harb. (Str. of Malacca)
- 2804 Penang Harb.
- 3101 N.W. Port Sumatra (by rail - Kala Hala)
- 3107 Padang Regera
- 3112 (S.E. Sumatra & sea) (by rail - Kala Hala)
- 3120 Puket (small scale)
- 3121 N.W. Sumatra (incl. Simeulue)
- 3122 " " (incl. Nias)
- 3123 S.W. " (liberated to Mega)
- 3124 " " (Mega to Cinggan, incl. Bantuan) + P. T. H. H.
- 3726 Puket Harb.
- 3740 Port Siantan & Cape Kala Singur (Dulacca Harb.)
- 3743 Port Siantan (near Singapore)
- 3745 Cape Kala Singur to Singapore
- 3746 South west of Singapore
- 3747 South of Singapore (by rail)
- 3748 Singapore Strait (W. side)
- 3749 " (S. side)
- 3750 Strait of Johore (C. side)
- 3752 Singapore Straits - medium scale
- 3760 Puket - medium scale

of ... group 2

The "coal chain"
in pockets in coal



all two = 28

"working" surface

mouth

bed

